AMENDMENTS TO THE SPECIFICATION

Please amend the specification as indicated below.

Please delete the following paragraph on page 6, lines 29-30 of the specification:

~~**FIGURE 1**: A schematic for the first and second layer of a 384 unit "one capture" format device.~~

and replace with the following new paragraph:

--**FIGURE 1**: A schematic for the first layer (110) and second layer (112) of a 384 unit "one capture" format device.--

Please delete the following paragraph on page 7, lines 1-2 of the specification:

~~**FIGURE 2**: A schematic for a "one-capture" format unit of the microstructure plate with electrode assembly.~~

and replace with the following new paragraph:

--**FIGURE 2**: A schematic for a "one-capture" format unit of the microstructure plate with electrode assembly with the sample accepting microstructure section, or chamber (210) at the point of the V, the first electrode (214) and second electrode (216) microstructure sections at the two tips of the V, and the capture microstructure section (212) between the accepting chamber and the electrode.--

Please delete the following paragraph on page 7, lines 3-4 of the specification:

~~**FIGURE 3**: A schematic for a "two-capture" format unit of the microstructure plate with electrode assembly.~~

and replace with the following new paragraph:

--**FIGURE 3**: A schematic for a "two-capture" format unit of the microstructure plate with electrode assembly with the sample accepting chamber (310) at the center of the N and electrode chambers (312) at the ends of the N.--

Please delete the following paragraph on page 7, lines 10-12 of the specification:

~~**FIGURE 4b**: A photograph of the microstructure depicted in 4a, molded in polydimethylsiloxane from a masterfabricated from cured SU-8 photoresist on a silicon wafer.~~

and replace with the following new paragraph:

--**FIGURE 4b**: A photograph of the microstructure depicted in 4a, molded in polydimethylsiloxane from a master, fabricated from cured SU-8 photoresist on a silicon wafer illustrating the (+) electrode port (410), the (-) electrode port (412), the sample port (414), and the capture microstructure section (416).--

Please delete the following paragraph on page 7, line 22 to page 8, line 2 of the specification:

~~**FIGURE 7**: A schematic of a two-layer microstructure plate device. Microchannels and sections may be created in polymer layers by micromachining, laser ablation, injection molding, embossing, or other appropriate methods. A membrane disc can then be inserted in the capture section. The top polymer sealing plate may have openings for the introduction of samples and electrodes at the appropriate microstructure sections, as shown. 384 or 1536 of these microstructures would created in an 8.5X11 cm footprint. The device may then be used in methods similar to Example 2.~~

and replace with the following new paragraph:

--**FIGURE 7**: A schematic of a two-layer microstructure plate device. Microchannels (710) and sections may be created in polymer layers by micromachining, laser ablation, injection molding, embossing, or other appropriate methods. A membrane disc can then be inserted in the capture section. The top polymer sealing-plate (712) may have openings for the introduction of samples and electrodes at the appropriate microstructure sections (714), as shown. 384 or 1536 of these microstructures would created in an 8.5X11 cm footprint. The device may then be used in methods similar to Example 2.—

Please delete the following paragraph on page 8, lines 3-14 of the specification:

~~**FIGURE 8a & b**: Schematics of alternative microstructure section/chamber and channel geometries. 8a shows an alternative channel arrangement. This geometry forces the molecules to enter the capture chamber from one end and exit from the other end. This could also improve the electric field and separation of the charged molecules. 8b shows a variation with a rectangular-shaped capture chamber orthogonal to the main channel, instead of the round chamber used in previous example devices. This geometry may provide a more uniform capture of the phosphorylated peptide on the cross. The fabrication of this structure in PDMS is similar to example 1; however, instead of a round membrane disc, a rectangular-shaped membrane would be inserted in the slot. Similar to other examples, 384 or 1536 of these structures could easily be created using polymer molding techniques in an 8.5X11 cm footprint.~~

and replace with the following new paragraph:

--**FIGURE 8a & b**: Schematics of alternative microstructure section/chamber (810) and channel geometries (812). 8a shows an alternative channel arrangement. This geometry forces the molecules to enter the capture chamber from one end and exit from the other end. This could also improve the electric field and separation of the charged molecules. 8b shows a variation with a rectangular-shaped capture chamber (820) orthogonal to the main channel (822), instead of the round chamber used in previous example devices. This geometry may provide a more uniform capture of the phosphorylated peptide on the cross. The fabrication of this structure in PDMS is similar to example 1; however, instead of a round membrane disc, a rectangular-shaped membrane would be inserted in the slot. Similar to other examples, 384 or 1536 of these structures could easily be created using polymer molding techniques in an 8.5X11 cm footprint.--

Please delete the following paragraph on page 8, lines 15-18 of the specification:

~~**FIGURE 9**: A schematic of the system of chambers and channels created by the three dimensional embodiments of the present invention. Note that the capture matrix is held between the third and second (from the bottom) layers of the center capture chamber.~~

and replace with the following new paragraph:

--**FIGURE 9**: A schematic of the system of chambers (910) and channels (912) created by the three dimensional embodiments of the present invention. Note that the capture matrix (914) is held between the third (916) and second (918) (from the bottom) layers of the center capture chamber.--

Please delete the following paragraph on page 8, lines 19-21 of the specification:

~~**FIGURE 10**: A schematic of the construction of a three dimensional microstructure unit from inner polymer layers, a membrane layer (flat sheet) and outer polymer layers (top layer, pictured, and solid base layer, not pictured).~~

and replace with the following new paragraph:

--**FIGURE 10**: A schematic of the construction of a three dimensional microstructure unit from inner polymer layers, a membrane layer (1010) (flat sheet) and outer polymer layers (1012) (top layer, pictured, and solid base layer, not pictured).-

Please delete the following paragraph on page 12, lines 1-22 of the specification:

~~The microstructure plate is preferably comprised of a plastic polymer material such as polymethyl methacrylate (PMMA), polydimethylsiloxane (PDMS), or any other suitable polymer or combination of polymers. Additionally, materials such as silicon, glass, or coated metal may be used in constructing the microstructure plate. It is preferred that at least one layer of the microstructure plate be made from a transparent material in order to allow optical access to the microstructure and the capture matrix. The microstructures may be created in the microstructure plate layers by photolithographic techniques, injection molding, hot embossing techniques or other suitable methods. The microstructure plate comprises at least two layers: a sealing plate layer, which seals at least one channel or microstructure section, and at least one other layer of the microstructure which forms the microstructure sections and~~

~~connecting channels. The sealing plate "seals" a microstructure section or channel by forming at least one side of the microstructure or channel and forming a liquid-tight seal with the other layers of the microstructure plate. In one preferred embodiment, the microstructure plate comprises a layer molded from a polymer material (usually by polymerizing over a master mold) and a sealing plate having openings (made by micro-machining or also by molding) that correspond to and align with the electrode and sample accepting microstructure sections of the first layer. Alternatively, the first layer may be molded with openings (*e.g.*, by using a clamp molding technique), and the sealing plate may comprise a flat layer without any openings. This embodiment may be preferred when sample injection and/or access to the electrode assembly is to occur on one face of the microstructure plate, while detection is to occur on the other side of the microstructure plate.~~

and replace with the following new paragraph:

--The microstructure plate is preferably comprised of a plastic polymer material such as polymethyl methacrylate (PMMA), polydimethylsiloxane (PDMS), or any other suitable polymer or combination of polymers. Additionally, materials such as silicon, glass, or coated metal may be used in constructing the microstructure plate. It is preferred that at least one layer of the microstructure plate be made from a transparent material in order to allow optical access to the microstructure and the capture matrix. The microstructures may be created in the microstructure plate layers by photolithographic techniques, injection molding, hot embossing techniques or other suitable methods. The microstructure plate comprises at least two layers: a sealing plate layer, which seals at least one channel or microstructure section, and at least one other layer of the microstructure which forms the microstructure sections and connecting channels. The sealing plate "seals" a microstructure section or channel by forming at least one side of the microstructure or channel and forming a liquid-tight seal with the other layers of the microstructure plate. In one preferred embodiment, the microstructure plate comprises a layer molded from a polymer material (usually by polymerizing over a master mold) and a sealing plate having openings (made by micro-machining or also by molding) that correspond to and align with the electrode and sample accepting microstructure sections of the first layer. Alternatively, the first layer may be molded with openings (*e.g.*, by using a clamp molding technique), and the sealing plate may comprise a flat layer without

any openings. This embodiment may be preferred when sample injection and/or access to the electrode assembly is to occur on one face of the microstructure plate, while detection is to occur on the other side of the microstructure plate.--

Please delete the following paragraph on page 13, lines 9-20 of the specification:

~~The capture microstructure section includes a material that serves as a capture matrix to capture positively or negatively charged molecules. The capture matrix comprises a material having the ability to bind molecules of interest specifically or nonspecifically or to significantly retard their movement. The capture matrix may be comprised of, for example, a membrane disc cut to specification or a gel prepared in the capture microstructure section. If a binding, type capture matrix is utilized, the capture matrix may be placed within the microstructure so that the molecule of interest electrophoreses either tangential to (across) or orthogonal to (through) the surface of the capture matrix. The capture matrix may be placed within the capture microstructure section during the fabrication of the microstructure plate, or may be place after the plate is assembled (*e.g.*, by using a photomask to polymerize a hydrogel-forming monomer injected through an opening to the exterior of the microstructure plate.) Capture matrix materials which bind the molecule of interests do so by chemically interacting with the charged molecule of interest through covalent bonding, hydrogen bonding, ionic bonding, Vander Waals interactions, or other molecular interactions.~~

and replace with the following new paragraph:

--The capture microstructure section includes a material that serves as a capture matrix to capture positively or negatively charged molecules. The capture matrix comprises a material having the ability to bind molecules of interest specifically or nonspecifically or to significantly retard their movement. The capture matrix may be comprised of, for example, a membrane disc cut to specification or a gel prepared in the capture microstructure section. If a binding, type capture matrix is utilized, the capture matrix may be placed within the microstructure so that the molecule of interest electrophoreses either tangential to (across) or orthogonal to (through) the surface of the capture matrix. The capture matrix may be placed within the capture microstructure section during the fabrication of the microstructure plate, or may be placed after the plate is assembled (*e.g.*, by using a photomask to polymerize a

hydrogel-forming monomer injected through an opening to the exterior of the microstructure plate). Capture matrix materials which bind the molecule of interests do so by chemically interacting with the charged molecule of interest through covalent bonding, hydrogen bonding, ionic bonding, Vander Waals interactions, or other molecular interactions.--